

**REMARKS**

Applicants thank the Examiner for the thorough consideration given the present application. In this Amendment, claims 18 and 34 have been amended.

In the January 25, 2005 Office Action, on pages 6 and 7, the Examiner has stated that certain features that Applicants are relying upon to distinguish the claimed invention from the prior art are not affirmatively recited in the claims. For example, the Examiner has stated that the claims do not recite a method for dynamically assigning a spreading sequence as soon as there is a change in the number of sequences needed. Accordingly, independent claims 18 and 34 have been amended to include these features. The Examiner is respectfully requested to reconsider the rejection of the present application in view of these new amendments and the remarks previously submitted in the October 4, 2005 Amendment distinguishing the claimed invention from the prior art. For the convenience of the Examiner, the previous remarks explaining the differences between the claimed invention and the cited prior art are reproduced below.

**The Rejection of Claims 18-21, 23, 31 and 34 under 35 U.S.C. § 102(a)**

The Office Action has again rejected claims 18-21, 23, 31 and 34 under the provisions of 35 U.S.C. § 102 (a) as being anticipated by an article entitled "Spreading Sequences for Multi-Carrier CDMA Systems". Claims 18 and 34, have been amended, and it is respectfully submitted that claims 18 and 34 are allowable over the cited prior art.

Applicants believe that the cited Popovic paper discloses a method for using an interference-based criterion to select the best class of sequences among several classes,

e.g., Walsh- Hadamard, Gold, Orthogonal Gold, Zadof Chu, etc., of sequences according to the environment. After selecting the class of sequence, the class is not changed until the communication system is changed. Popovic's disclosed method does not disclose a method for dynamically assigning spreading sequences or the class of sequences.

In contrast, the Applicants' claimed invention is directed to a method for using an interference-based criterion to select the best sequences, from a predetermined set of sequences, which is included in a family of spreading sequences which may correspond to some of Popovic's set of spreading sequences. The claimed invention is used to dynamically assign sequences as soon as the number of sequences needed in the network is changed. The number of the sequences needed in the network has to be lower or equal to the total number of sequences in the family in order to give degrees of freedom for optimization of the allocation. Examples of such changes include when one user is dropped, when one user is entering the network, when one user asks for additional sequences, etc.

In Popovic's paper, it appears that one of the criterion is the mutual interference among "all possible different pairs of sequences within the set [class] of sequences". (See page 3, col. 1). The results are then given by considering each class (Figs. 5-8) and all sequences from each class. The conclusion of the Popovic paper is that orthogonal spreading sequences give the "best performance" for downlink mobile radio (See, page 2 column 2 last paragraph) and that Zadoff Chu sequences give the best performance for asynchronous uplink systems (See Conclusion). Once the best class of sequences has been selected according to Popovic criteria, nothing is disclosed on how

one selects from this predetermined class of let say L sequences the subset of K sequences ( $K \leq L$ ) that is needed by the active users.

In the claimed invention, it is assumed that there is a predetermined set in the family of spreading sequences, and one or more spreading sequences are assigned to the user, which are different from the predetermined set, among the family, so as to minimize a function representing the interference between the one or more sequences and the predetermined set of spread sequences.

The Applicants believe that page 1, Fig 1 of Popovic's paper, does not disclose a method for assigning a spreading sequence. Page 1, Fig 1., only appears to disclose a method for using a spreading sequence. As described in the present patent application, assignment of a spreading sequence means the selection of a spreading sequence for a given user. Nothing is disclosed on Page 1 of Popovic regarding how the spreading sequence  $s_m(k)$  is selected for user k. A criterion, i.e. the spectral correlation, is proposed on Page 2, Column 1, second paragraph for selecting the spreading sequences. This rule is a "measure of mutual interference among any pair of users in the MC-CDMA system" (page 3, Column 1, second paragraph). In the Popovic paper, the "overall system performance" (page 3, column 1, paragraph 2) is used to select the best set of spreading sequences. Popovic fails to teach or suggest the claimed features of claim 18 or 34 for assigning a user one or more spreading sequences.

Applicants believe that amended claims 18 and 34 are clearly patentable over Popovic for the aforementioned reasons. Applicants believe that dependent claims 19-33

are patentable for at least the same reasons as independent claim 18 from which they depend.

**CONCLUSION**


All objections and rejections raised in the Office Action having been addressed, it is respectfully submitted that the present application is in condition for allowance and such allowance is respectfully solicited. Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact McGrath, Richard J. (Reg. No. 29,195), to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,

BIRCH, STEWART, KOLASCH &, BIRCH, LLP

By:   
Michael R. Cammarata  
Reg. No. 39,491

  
MKM/RJM/kmr  
(703) 205-8000  
0054-0215P

P.O. Box 747  
Falls Church, VA 22040-0747  
703-205-8000